

What is claimed is:

1. A signal sampling circuit, suitable in a tilt sensor, wherein the tilt sensor comprises an output pin, at least a pair of a first input pin and a second input pin set
5 symmetrically in each side of the output pin, and electrolyte electrically conductive between the first input pin and the output pin and between the second input pin and the output pin, the signal sampling circuit comprising:

a signal-generating module regularly generating a plurality of level-measuring signals with equal intervals, and alternately and multi-directionally sending the
10 level-measuring signals to the first input pin and the second input pin of the tilt sensor in turn, respectively, therefore, the output pin of the tilt sensor outputs a first output signal and a second output signal in order corresponding to the level-measuring signals;

a sample and hold module sampling and holding the first output signal and the
15 second output signal in turn, and outputting a first holding signal and a second holding signal, respectively; and

a differential module receiving and differentiating the first holding signal and the second holding signal, outputting a level-estimating-result signal, and sending the level-estimating-result signal to a micro controller unit to derive the tilt information of
20 one direction.

2. The signal sampling circuit of claim 1, wherein the signal-generating module alternately and multi-directionally inputs the level-measuring signals to the tilt sensor.

25 3. The signal sampling circuit of claim 1, wherein the electrical property of the

level-measuring signals sent from the signal-generating module is positive or negative.

4. The signal sampling circuit of claim 1, wherein the signal-generating module is a signal generator or a pulse generating circuit.

5

5. The signal sampling circuit of claim 1, wherein the tilt sensor is a single axis electrolytic tilt sensor or a dual axis electrolytic tilt sensor.

6. The signal sampling circuit of claim 1, wherein the sample and hold module is a sample and hold circuit.

10

7. The signal sampling circuit of claim 1, wherein the differential module is a differential amplifier, a subtracter or a micro controller.

15

8. The signal sampling circuit of claim 1, wherein the level-measuring signals are identically wide and are spaced at one or a plurality of intervals.

9. The signal sampling circuit of claim 1, wherein the sample and hold module triggers and outputs the first holding signal and the second holding signal according to a plurality of trigger signals, the trigger signals being level-measuring signals or signals having a same time sequence as the level-measuring signals.

20

10. A tilt estimating circuit, suitable to estimate the slant, the tilt estimating circuit comprising:

25

a tilt sensor comprising a shell, an output pin, at least a pair of a first input pin

and a second input pin set symmetrically in each side of the output pin, and electrolyte electrically conductive between the first input pin and the output pin and between the second input pin and the output pin;

5 a signal-generating module regularly generating a plurality of level-measuring signals with equal intervals, and alternately and multi-directionally sending the level-measuring signals to the first input pin and the second input pin of the tilt sensor in turn respectively ,therefore, the output pin of the tilt sensor output a first output signal and a second output signal in order corresponding to the level-measuring signals;

10 a sample and hold module sampling and holding the first output signal and the second output signal in turn, and then outputting a first holding signal and a second holding signal, respectively;

a differential module receiving and differentiating the first holding signal and the second holding signal, and outputting a level-estimating-result signal; and

15 a micro controller unit receiving the level-estimating-result signal and comparing the level-estimating-result signal with a predetermined table to obtain tilt information of one direction.

20 11. The tilt estimating circuit of claim 10, wherein the signal-generating module alternately and multi-directionally inputs the level-measuring signals into the tilt sensor.

12. The tilt estimating circuit of claim 10, wherein an electrical property of the level-measuring signals sent from the signal-generating module is positive or negative.

25

13. The tilt estimating circuit of claim 10, wherein the signal-generating module is a signal generator or a pulse generating circuit.

14. The tilt estimating circuit of claim 10, wherein the tilt sensor is a single axis electrolytic tilt sensor or a dual axis electrolytic tilt sensor.

15. The tilt estimating circuit of claim 10, wherein the sample and hold module is a sample and hold circuit.

16. The tilt estimating circuit of claim 10, wherein the differential module is a differential amplifier, a subtracter or a micro controller.

17. The tilt estimating circuit of claim 10, wherein the level-measuring signals have a same width and are spaced at one or a plurality of intervals.

18. The tilt estimating circuit of claim 10, wherein the sample and hold module triggers and outputs the first holding signal and the second holding signal according to a plurality of trigger signals, the trigger signals being the level-measuring signals or signals having a same time sequence as the level-measuring signals.

19. A tilt estimating circuit, suitable to estimate the slant, the tilt estimating circuit comprising:

a tilt sensor comprising a shell, an output pin, at least a pair of a first input pin and a second input pin set symmetrically in each side of the output pin, and electrolyte electrically conductive between the first input pin and the output pin and between the

second input pin and the output pin;

a signal-generating module regularly generating a plurality of level-measuring signals with equal intervals, and alternately and multi-directionally sending the level-measuring signals to the first input pin and the second input pin of the tilt sensor in turn respectively, therefore, the output pin of the tilt sensor output a first output signal and a second output signal in order corresponding to the level-measuring signals;

a sample and hold module sampling and holding the first output signal and the second output signal in turn, and outputting a first holding signal and a second holding signal, respectively; and

a micro controller unit differentiating the first holding signal and the second holding signal, getting a level-estimating-result signal, and comparing the level-estimating-result signal with a predetermined table to acquire the slant and further to obtain tilt information of one direction.

15

20. The tilt estimating circuit of claim 19, wherein the signal-generating module alternately and multi-directionally inputs the level-measuring signals to the tilt sensor.

21. The tilt estimating circuit of claim 19, wherein an electrical property of the level-measuring signals sent from the signal-generating module are positive, negative or both positive and negative.

22. The tilt estimating circuit of claim 19, wherein the signal-generating module is a signal generator or a pulse generating circuit.

25

23. The tilt estimating circuit of claim 19, wherein the tilt sensor is a single axis electrolytic tilt sensor or a dual axis electrolytic tilt sensor.

24. The tilt estimating circuit of claim 19, wherein the sample and hold module
5 is a sample and hold circuit.

25. The tilt estimating circuit of claim 19, wherein the level-measuring signals have a same width and are spaced at one or a plurality of intervals.

10 26. The tilt estimating circuit of claim 19, wherein the sample and hold module triggers and outputs the first holding signal and the second holding signal according to a plurality of trigger signals, the trigger signals being the level-measuring signals or signals having a same time sequence as the level-measuring signals.

15 27. A signal sampling circuit, applied in a tilt sensor, wherein the tilt sensor comprises at least a pair of input pins set symmetrically and an output pin, the signal sampling circuit comprising:

a signal-generating module generating in order a plurality of level-measuring signals with a same cycle and spaced at one or a plurality of intervals, and
20 multi-directionally sending the level-measuring signals to the input pins of the tilt sensor in turn, respectively, to make the output pin of the tilt sensor output a series of output signals composed of a plurality of output signals corresponding to the level-measuring signals;

a sample and hold module, connecting to the signal-generating module, receiving
25 in order the level-measuring signals as a plurality of trigger signals, and sampling and

holding the series of output signals in turn in accordance with the trigger signals to divide the series of output signals, and then outputting a plurality of holding signals in turn; and

5 a differential module receiving and differentiating the holding signals, and outputting a level-estimating-result signal to a micro controller unit to derive tilt information of one direction, wherein the holding signals correspond to the level-measuring signals input into the input pins set symmetrically and in pairs.

10 28. The signal sampling circuit of claim 27, wherein the electrical property of the level-measuring signals sent from the signal-generating module are positive, negative or both positive and negative.

29. The signal sampling circuit of claim 27, wherein the signal-generating module is a signal generator or a pulse generating circuit.

15

30. The signal sampling circuit of claim 27, wherein the tilt sensor is a single axis electrolytic tilt sensor or a dual axis electrolytic tilt sensor.

20 31. The signal sampling circuit of claim 27, wherein the sample and hold module is a sample and hold circuit.

32. The signal sampling circuit of claim 27, wherein the level-measuring signals have a same width and are spaced at one or a plurality of intervals.